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U.S. DEPARTMENT OF AGRICULTURE - FOREST SERVICE
PACIFIC SOUTHWEST FOREST AND RANGE EXPERIMENT STATION

FOREST INSECT CONDITIONS
SAN BERNARDINO NATIONAL FOREST
SAN JACINTO DISTRICT
APPRAISAL SURVEY

September 1959

Introduction

On September 22 and 23, R. C. Hall from the Station accompanied J. L. Averell from the Region, John Pierce, Area Technical Adviser for southern California forests, and Bill Horn from the Supervisor's office, San Bernardino National Forest, on a review of the maintenance program to control insects in the San Jacinto Zone of Infestation. September 22 was spent on the San Jacinto District with Ranger John Gilman reviewing the progress of the maintenance control program and inspecting some of the more critical areas of infestation. On September 23 the status of the insects in Coulter pine was investigated.

The San Jacinto control unit is located in the San Jacinto Mountains approximately 50 miles southeast of San Bernardino, California. It is within an area that is heavily used for recreation, the center of recreational activities being the town of Idyllwild. This area is typical of southern California mountain resorts, which have many summer homes built in dense timbered, year-long residences, organizational camps, picnic, campground facilities as well as many hiking and riding trails.

The ownership in the control unit is mixed private, federal and state. Private owners have 9,200 acres; the U. S. Forest Service 11,300 acres; the area of state land, held by the Division of Beaches and Parks is undetermined.

The present control project is set up on a year-round maintenance basis, which calls for spotting and treating infested trees as they show up. Summer control is carried on exclusively through the use of ethylene dibromide in diesel oil applied to the bark of felled trees to the point of runoff. Winter control is both by chemical and some burning.

This project is a cooperative one, with the U. S. Forest Service carrying on the actual control work on all ownership. Financing is obtained through a cooperative agreement involving the U. S. Government, the State of California, and the Riverside County Flood Control District. Federal funds cover the cost of control on Federal lands and twenty-five percent of the cost on private land. State funds cover one-half of the cost on private land, and Flood Control funds one-quarter of the cost on private land. The San Jacinto Zone of Infestation currently includes five different units designated as the Indian Creek, North Fork, Strawberry, Mountain Center and Garner Valley units.

Insect and Host Species

The principal insects in this area are the western pine beetle, Dendroctonus brevicomis Lec., in ponderosa and Coulter pine; the mountain pine beetle, D. monticolae Hopk., in sugar, ponderosa and Coulter pine; the California flatheaded borer, Melanophila californica Van D., in Jeffrey, ponderosa and Coulter pine; the fir engraver, Scolytus ventralis Lec., in white fir; the California five-spined engraver, Ips confusus Lec., in Coulter, ponderosa and sugar pine; and the Oregon pine engraver, Ips oregoni (Eichh.) in Jeffrey pine. The timber type varies from mixed conifers (sugar, ponderosa, Jeffrey and Coulter pine, white fir and incense-cedar) to pure stands of Coulter and Jeffrey pine and bigcone Douglas-fir. There are no important insect enemies in incense-cedar and bigcone Douglas-fir.

The Current Situation

Faded trees on most of the San Jacinto District outside of the wild area were spotted by helicopter on August 31. A total of 1,339 trees were found. This count included 342 faded trees in May Valley which is outside the present maintenance control zone. Eliminating these from consideration would leave about 1,000 faded trees within the control area where the program calls for keeping the insect problem to the lowest possible level. In a similar aerial spotting job late in June, 879 faded trees were counted. Thus the number of faded trees increased by 460 in about a two-month period. During this period the control crew of from three to four men treated about 140 infested trees. From this it would appear that maintenance control is falling far behind its objective of treating the infested trees as rapidly as they show up.

The aerial survey also showed about 40 faded trees in the Mount San Jacinto State Park outside of the wild area. No control work has been done to date within the Park.

A ground inspection was made by car and on foot of most of the infestation area where insect damage appeared to be acute. This included all the units now included under the maintenance of the control program, May Valley where no control has been attempted, and the area north of the Indian Creek unit which is outside of the zone of infestation where no control has been done.

This reconnaissance showed that Coulter pine loss in parts of May Valley is at a high level. In local areas the western pine beetle and the California five-spined engraver have teamed up to kill trees in large groups. One group observed during the aerial spotting operation contained 94 faded trees. Also one group of 11 Jeffrey pine trees currently infested with the California flatheaded borer was observed. In the north end of the District, outside the zone of infestation, Coulter pine losses were at a high level and many large groups were observed.

In the other units no large concentrations were noted, although groups of two and three faded trees were not uncommon. The Indian Creek unit showed a great improvement over a year ago when a serious outbreak of the western pine beetle developed in Coulter pine as the result of a buildup of beetles in windthrown trees during the preceding winter.

Several groups of Coulter pine in the Indian Canyon unit were examined, some at a distance and others close-up. From this examination it appears that the California five-spined engraver is playing a major role in the infestation. In one four-tree group, about 75 percent of the crown on three trees had been killed and the other about 50 percent of the crown was dead. No western pine beetle could be found in the base of these trees; the engraver apparently was responsible for the damage. In a nine-tree group, examined where an average of about 75 percent of the crowns were killed, only one tree showed evidence of the western pine beetle in the base. One 14-inch green-based tree was felled and examined. Sixty percent of the top of the tree was sorrel, 20 percent straw-colored, and the basal 20 percent was green. The sixty percent sorrel was abandoned by the engraver and the second generation had moved down into the straw-colored area and had extended their attacks down below the bottom of the green crown and to within about 10 feet of the base. The brood stages were mostly large larvae, but an occasional pupa was found. All stages appeared to be healthy, and numerous.

Suggested Action

No estimate has been made of the number of infested trees among those spotted in late June or those spotted in late August. Until that is done there is no way to be sure of the size of the job immediately ahead. Consequently, it would appear that spotting the currently infested trees is the first job to be done. Spotting should also provide an indication of the insects responsible for the loss, and the brood stages, so that it can be determined if any of the broods in the currently infested trees are likely to emerge later this fall or if they are likely to carry over the winter. In this part of the State, trees infested with the western pine beetle and the California five-spined engraver are apt to emerge this fall and produce another generation unless quick action is taken to prevent this from happening.

The broods of the California flatheaded borer in Jeffrey pine will carry over the winter and are not likely to emerge before mid-April at the earliest. Therefore these trees can be segregated and left for later action this winter.

After the spotting has been completed, it is suggested that a program of control be undertaken to treat all of the currently infested trees prior to emergence of the broods now in them. Piecemeal control of only part of the infested material cannot be expected to curtail the outbreak.

It is also suggested that action be taken on State Park land to control the currently infested trees since they adjoin an area of high priority. While no control work has been done in the May Valley unit, and this unit is outside of the area where maintenance control is now being undertaken, the interests of the owners in doing control might well be determined. In addition, consideration should be given to the possibility of extending the zone of infestation to include the timbered area north of the Indian Valley unit, which includes a considerable amount of private land and where no control is possible under the existing cooperative agreement.

Finally we suggest that consideration be given to using lindane in the control of the pine engraver beetle. From limited sampling done, there is indication of a high incidence of this insect mixed in with the western pine beetle. The use of lindane should result in considerable reduction in control costs since less material is needed and no limbing, bucking, or turning of logs is necessary.

October 13, 1959
Berkeley, California

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Entomologist